

AMENDMENTS TO THE CLAIMS:

1-30. (canceled)

31. (previously presented) A medical method comprising:

providing a carrier holding a multiplicity of electromechanical transducers

defining respective data gathering apertures;

placing said carrier and a patient adjacent to one another so that said transducers are disposed in effective pressure-wave-transmitting contact with the patient;

supplying a first plurality of said transducers with electrical signals of at least one pre-established ultrasonic frequency to produce first pressure waves in the patient;

receiving, via a second plurality of said transducers, second pressure waves produced at internal tissue structures of the patient in response to said first pressure waves; and

performing electronic 3D volumetric data acquisition and imaging of said internal tissue structures by analyzing signals generated by said second plurality of said transducers in response to said second pressure waves,

the analyzing of signals generated by said second plurality of said transducers including coherently combining structural data from the respective data-gathering apertures,

said carrier including a plurality of rigid substrates containing said data-gathering apertures, the coherently combining of structural data from the respective data-gathering apertures including determining relative positions and orientations of said substrates relative to one another,

the determining of relative positions and orientations of said substrates including executing computations according to a self-cohering algorithm.

32. (canceled)

33. (previously amended) The method defined in claim 31 wherein each of said substrates is provided with a plurality of point scatterers, the determining of relative positions and orientations of said substrates including periodically scanning said point scatterers with ultrasonic pressure waves and calculating instantaneous positions of said point scatterers.

34. (original) The method defined in claim 33 wherein the determining of relative positions and orientations of said carriers includes executing computations according to a self-cohering algorithm.

35. (currently amended) The method defined in claim [[32]] 31 wherein the determining of relative positions and orientations of said carriers includes periodically energizing at some of said transducers with at least one predetermined electrical frequency and calculating instantaneous positions of the transducers so energized.

36-46. (canceled)

47. (previously presented) A medical scanning method comprising:

providing a plurality of electromechanical sensors disposed in data-gathering arrays or apertures on respective rigid substrates mounted to a flexible carrier;

disposing said carrier in relation to a patient;

after the disposing of said carrier, activating said sensors to effectuate a solely electronic ultrasonic-wave scan of internal organic structures of the patient resulting in encoded three-dimensional structural data pertaining to the internal organic structures, the activating of said sensors including exciting said sensors to define said data-gathering arrays or apertures;

the activating of said sensors including generating a plurality of tissue-scanning beams via respective ones of said data-gathering arrays or apertures to capture or produce structural data pertaining to said internal organic structures and combining the structural data from said data-gathering arrays or apertures; and

operating on the data from said sensors to produce an electronically encoded three-dimensional model or analog of said internal organic structures.

48. (previously presented) The method defined in claim 48 wherein said three dimensional model is produced from said data alone.

49. (previously presented) The method defined in claim 48, further comprising generating an image of at least one of said internal structures from said model.